Claims as Pending in U.S. Appln. No. 09/321,247, Upon Entry of Amendment Responsive to Office Action mailed July 17, 2001 (Paper No. 11)

1. An expression vector, wherein the expression region comprises: a promoter;

an intracellular retention signal sequence encoding region, and a chemokine encoding gene;

wherein said intracellular retention signal sequence and said chemokine encoding gene are expressed from said promoter as a single intrakine transcript.

- 2. The expression vector of claim 1, further comprising a gene encoding a secreted chemokine.
- 3. The expression vector of claim 2, wherein said gene encoding said secreted chemokine is expressed from an internal ribosome entry site.
 - 4. The expression vector of claim 1, further defined as a retroviral vector.
- 5. The expression vector of claim 1, wherein said intracellular retention signal sequence is an endoplasmic reticulum retention signal sequence.
- 6. (Amended) The expression vector of claim 5, wherein said endoplasmic reticulum retention signal sequence is a KDEL sequence (SEQ ID NO:7).
- 7. (Amended) The expression vector of claim 6, wherein said KDEL sequence (SEQ ID NO:7) has the amino acid sequence SEKDEL, SEQ ID NO:6.
- 8. (Amended) The expression vector of claim 1, wherein said chemokine gene encodes a chemokine that binds to a C-C chemokine 5 receptor, a C-C chemokine 3 receptor, a C-C chemokine 1 receptor or a CXR4 receptor.

- 9. (Amended) The expression vector of claim 1, wherein said chemokine gene encodes a chemokine that binds to a C-C chemokine 5 receptor.
- 10. (Amended) The expression vector of claim 1, wherein said chemokine gene encodes a chemokine that binds to a C-C chemokine 3 receptor.
- 11. (Amended) The expression vector of claim 1, wherein said chemokine gene encodes a chemokine that binds to a C-C chemokine 1 receptor.
- 12. (Amended) The expression vector of claim 1, wherein said chemokine gene encodes a chemokine that binds to a CXR4 receptor.
- 13. (Amended) The expression vector of claim 2, wherein the secreted chemokine is RANTES (Regulated upon Activation, Normal T cell Expressed, and presumably Secreted), MIP-1α (Macrophage Inflammatory Protein-1α), or SDF (stromal cell derived factor-1).
- 14. (Amended) The expression vector of claim 2, wherein said secreted chemokine binds to a chemokine receptor.
- 15. (Amended) The expression vector of claim 14, wherein one or more amino acids are deleted from the N-terminus of the secreted chemokine.
- 16. (Amended) The expression vector of claim 1, wherein said intracellular retention signal sequence directs a protein expressed from said single intrakine transcript to the endoplasmic reticulum, Golgi apparatus, a lysosome, an intracellular vesicle or other cellular compartment.
- 17. (Amended) A method of inhibiting phenotypic expression of a chemokine receptor in a cell, wherein the method comprises blocking cell surface expression of said chemokine receptor by binding of said chemokine receptor with an intrakine.

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18. The method of claim 17, further defined as comprising the steps of:
obtaining a vector comprising a nucleic acid segment encoding a promoter, an
intracellular retention signal sequence and a chemokine receptor binding polypeptide gene; and
transducing said vector into said cell;

wherein said vector expresses said intracellular retention signal sequence and chemokine receptor binding polypeptide gene under the transcriptional control of said promoter to produce a fusion polypeptide when transduced into said cell.

- 19. The method of claim 18, wherein said polypeptide is a chemokine, a chemokine analog, an antibody or a peptide.
 - 20. The method of claim 19, wherein said polypeptide is a chemokine.
- 21. The method of claim 18, wherein said polypeptide is RANTES, MIP-1 α , SDF, HIV gp120 or the V3 region of HIV gp120.
- 22. The method of claim 20, wherein said chemokine is RANTES, MIP-1 α or SDF.
- 23. (Amended) A method of inhibiting HIV infection of a cell, said method comprising phenotypically knocking out an HIV co-receptor in said cell by binding of said HIV co-receptor with an intrakine, wherein said phenotypic knock-out of said HIV co-receptor in said cell inhibits infection of said cell.
- 24. (Amended) The method of claim 23, wherein said co-receptor is a C-C chemokine 5 receptor, a C-C chemokine 3 receptor, a C-C chemokine 1 receptor or a CXR4 receptor.

- 29. The method of claim 24, wherein said cell is transduced with a CC-chemokine gene fused to an endoplasmic reticulum (ER)-retention signal to intracellularly block the transport and surface expression of an endogenous CC receptor.
- 33. (Amended) The method of claim 29, wherein said CC receptor is a C-C chemokine 5 receptor (CCR5), a C-C chemokine 3 receptor (CCR3), or a C-C chemokine 1 receptor (CCR1).
- 34. The method of claim 24, wherein said cell is transduced with a CXC-chemokine gene fused to an endoplasmic reticulum (ER)-retention signal to intracellularly block the transport and surface expression of an endogenous CXR4 receptor.
- 35. (Amended) An expression vector for treatment of an HIV infection in a subject, wherein said expression vector includes:

an expression region which comprises:

a promoter;

a one of

an intracellular retention signal sequence encoding region; and

a chemokine encoding gene;

wherein said intracellular retention signal sequence and said chemokine encoding gene are expressed as a single intrakine transcript from said promoter; and

wherein when said expression vector is administered to lymphocytes, monocytes, macrophages or stem cells of said subject said cells exhibit a phenotypic knock out of an HIV co-receptor.

- 36. The expression vector of claim 35, wherein said cells are transduced *ex vivo* with said vector.
- 37. The expression vector of claim 36, wherein said stem cells are autologous stem cells.

- 38. (Amended) A composition comprising the expression vector of claim 35 and a pharmaceutically acceptable solution.
- 39. (Amended) A method of increasing white blood cell count in a subject with an HIV infection comprising administering to said subject a pharmaceutical composition comprising lymphocytes, monocytes, macrophages or stem cells transduced with a vector of claim 1, thereby increasing white blood cell count in said subject with an HIV infection.